

*Application No. 09/482,717
Reply to Office Action of Feb. 9, 2005
Amendment dated May. 9, 2005*

REMARKS/ARGUMENTS

The Written Description Rejections.

The Examiner rejects claims 1-2, 11-12, 21, and 32-34 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Claims 32-34 have been canceled.

As to the remaining claims, the Examiner asserts that the newly language in claims 1, 11, and 21 (that requires continued monitoring for echo cancellation activity/echo energy after an echo cancellation unit has been released into the pool) is not supported adequately by the specification.

Before responding to the Examiner's statements, it is important to understand the prevailing law regarding the written description requirement.

"To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention." MPEP § 2163(I); *See, e.g., Vas-Cath, Inc. v. Mahurker*, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991); MPEP § 2163.02.

"To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of

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circumstances is not sufficient.” MPEP § 2163(I)(B)(3)(b) (quoting *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999); *see also* MPEP § 2163.07(a).

“Compliance with the written description requirement is a question of fact which must be resolved on a case-by-case basis.” MPEP § 2163(I)

“While there is no *in haec verba* requirement, newly added claim limitations must be supported in the specification through express, *implicit*, or *inherent* disclosure.” MPEP § 2163(I)(B) (emphasis supplied.); *see, e.g.*, MPEP § 2163.02. Moreover, the U.S. Court of Appeals for the Federal Circuit in *Eiselstein v. Frank*, 52 F.3d 1035, 1038 (Fed. Cir. 1995), reviewed the need for literal support for claim language in the specification and stated:

In order to determine whether a prior application meets the “written description” requirement with respect to later-filed claims, the prior application need not describe the claimed subject matter in exactly the same terms as used in the claims; it must simply indicate to persons skilled in the art that as of the earlier date the applicant had invented what is now claimed. . . . The test is whether the disclosure of the application relied upon reasonably conveys to a person skilled in the art that the inventor had possession of the claimed subject matter at the time of the earlier filing date (citing *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555 (Fed. Cir. 1991) and *Ralston Purina Co. v. Far-Mar-Co, Inc.*, 772 F.2d 1570 (Fed. Cir. 1985)) (internal citations omitted).

By way of illustration, “[b]y disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory or has an advantage, a patent application necessarily discloses that function, theory or advantage, *even though it says nothing explicit concerning it.*” MPEP § 2163.07(a) (emphasis supplied.) “The application may later be amended to recite the function, theory, or advantage without introducing prohibited new matter.” MPEP § 2163.07(a).

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"The examiner has the initial burden of presenting evidence or reasoning to explain why persons skilled in the art would not recognize in the original disclosure a description of the invention defined by the claims." MPEP § 2163(I)(B)(3)(b). "The examiner, therefore, must have a reasonable basis to challenge the adequacy of the written description. The examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims." MPEP § 2163.04.

"Upon reply by applicant, . . . [the examiner is required to] fully respond to applicant's rebuttal arguments, and properly treat any further showings submitted by applicant in the reply." MPEP § 2163.02.

Thus, lack of literal support for specific claim terms is not enough to support a rejection under 35 U.S.C. § 112 where one of skill in the art would understand from the disclosure that the inventors had possession of the invention, as claimed, at the time of filing.

Based on the Specification, one of skill in the art would understand from the disclosure that the inventors possessed, at the time the application was filed, the embodiment that requires, after an echo cancellation unit has been returned to the pool, the first external transmission medium to be monitored for at least one of echo cancellation activity and echo energy during the communication connection between the first local user device and remote user device and, when the detected at least one of echo cancellation activity and echo energy is above a determined threshold, again performing echo cancellation on the communication connection. At page 2, lines

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4-6, and page 7, lines 20-21, the Specification states that the echo cancellation units are assigned to a communication connection based on need or on an "as needed" basis. According to *Webster's New World Dictionary*, "need" is defined as a condition in which there is a deficiency of something [e.g., voice quality] or one requiring relief or supply" and "as" is defined as "in the role, function, capacity or sense of". Thus, "on the basis of need" or "as needed" means that echo cancellation is performed whenever there is a deficiency of voice quality during a communication.

This construction is consistent with other portions of the Specification. At page 10, lines 15-23, the user presses a key labeled "Echo Cancellation" whenever intolerable echoes are audibly perceived. At page 12, lines 3-8, the Specification states:

In a preferred approach, the controller 40 will only allow an echo cancellation unit to continue to service a particular communication connection if greater than a threshold amount of echo cancellation is being performed. Thus, small echoes that do not normally compromise communication quality will be ignored.

At page 14, lines 17-20, it is stated that the determination as to whether intolerable reflections are being received at the switching center from the first trunk is made by the local subscriber or by functionality within the switching center itself. Thus, the Specification clearly envisions an embodiment in which a user presses an echo cancellation button at a first time during a communication, in response an echo cancellation unit is allocated to the communication, a determination is made by the switching center at a second later time that echo cancellation activity is less than a selected threshold, in response the echo cancellation unit is removed from the communication and returned to the pool, the user again presses the echo cancellation button at a

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third later time during the same communication, and in response an echo cancellation unit is again allocated to the communication, and so on.

The Substantive Rejection of Claims 1-10.

Applicant respectfully traverses the Examiner's prior art rejections of claims 1-10 because the references fail to teach or suggest at least the italicized features in independent claim 1:

1. A method for performing echo cancellation within a switching center of a communication network, said switching center being coupled to a plurality of local user devices and a plurality of external transmission media, said method comprising:
 - (a) providing a pool of echo cancellation units within said switching center;
 - (b) coupling a first local user device to a first external transmission medium as part of a communication connection between the first local user device and a remote user device;
 - (c) *after the first local user device is coupled to the first external transmission medium, monitoring the first external transmission medium for at least one of echo cancellation activity and echo energy during the communication connection between the first local user device and the remote user device;*
 - (d) *in response to the detected at least one of echo cancellation activity and echo energy being above a determined threshold, allocating a first echo cancellation unit from the pool of echo cancellation units to the communication connection;*
 - (e) *in response to the detected at least one of echo cancellation activity and echo energy thereafter falling below the determined threshold, discontinuing the allocation of the first echo cancellation unit to the communication connection;*
 - (f) *thereafter monitoring the first external transmission medium for at least one of echo cancellation activity and echo energy during the communication connection between the first local user device and the remote user device; and*
 - (g) *when the detected at least one of echo cancellation activity and echo energy is above a determined threshold, again performing echo cancellation on the communication connection.*

Dunn et al.

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Dunn et al. is directed to an echo cancellation system comprising a switch for selecting between an echo canceled signal and the untreated signal. "When a communications session (e.g., a call) is initiated on a facility served by the system, the system initially allocates an echo canceller to that facility." (Col. 4, lines 53-56.) The echo canceled signal is used when an echo comparison system determines that the difference between the echo-canceled signal and the untreated signal is large while the untreated signal is used when the comparison system determines that the difference is small. "If the system determines than an insignificant echo is present, the echo canceller is deactivated, and preferably made available for allocation to another facility when needed." (Col. 4, lines 56-59; See also col. 7, lines 38-40 and col. 9, lines 21-27.)

In Figure 3, Dunn et al. shows that the echo canceller may be allocated before or after it is determined that echo cancellation is required. In the former case, echo cancellation is terminated if measurements indicate that echo cancellation is not required. In neither case does Dunn et al. teach or suggest that the continued monitoring of the communication path after the tests of steps 314-330 and decision diamond 332 are initially completed. At col. 11, lines 3-4, it is stated that "[t]he method ends at step 344." Dunn et al. teaches that, once deactivated, the echo canceller is not later reassigned to the channel in the event that a substantial amount of echo energy is later introduced into the channel (col. 10, lines 20-25, and col. 10, lines 56-62). Thus, once a decision is made in Dunn et al. that echo cancellation is or is not required that decision remains in place for the remainder of the communication even though echo energy levels later change to render that decision improper.

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At page 11, the Examiner states that Dunn, et al., states that, at the time the echo canceller is deactivated, echo cancellation is not required on the channel and that Fig. 3 shows that the allocation/deactivation/reallocation of echo cancellers is a continuous process irrespective of channels. Specifically, the Examiner states that the monitoring of the state of echo cancellation using every sample of a transmitted signal is continuously being performed at step 314 through step 338.

The Examiner mischaracterizes the clear teachings of Dunn, et al. At col.9, lines 17-27, Dunn et al. states:

In operation, when a previously idle input channel commences operation, the control and allocation unit 422 allocates available echo canceller, if there are any, to service the channel. The allocated echo canceller begins operation. If the echo canceller determines that echo is small, it deactivates itself and notifies the control and allocation unit 422. The control and allocation unit 422 may *then* instruct input selector and output multiplexors to establish a direct path for the channel over bus 416. Thereafter, the control and allocation [unit]422 may reassign that echo canceller to *another* channel requiring service.

As can be seen from Fig. 4 of Dunn et al., the echo canceller is located on internal buses 428 and 442. "Input channels which are not allocated an echo canceller channel are passed directly to output interface and multiplexor 418 over internal bus 416", bypassing the echo cancellers and control and allocation unit 422. (*Id.* at col. 9, lines 9-11.) "The outputs from the echo cancellers 100a-100z are transmitted to output multiplexor 418 via internal bus [430]." (*Id.* at col. 9, lines 10-12.) *Thus, when the echo canceller is removed from a communication path, the path bypasses the echo canceller and control and allocation unit 422, thereby making further monitoring of the communication path for echo impossible.*

Regarding Fig. 3, Dunn, et al., states at col. 10, lines 56-62:

If, in step 332, the energy in the echo signal did not exceed the threshold, then the method continues in step 336. The comparator 162 selects the untreated received signal *r* to the output signal *y*. The echo canceller is deactivated. In step 338,

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which is optional, the echo canceller is released for reallocation to *another* channel. The method continues at step 340.

(Emphasis supplied.) These paragraphs show that, once a decision is made not to allocate an echo canceller to a channel, *that decision is final*. The communication path is connected such that the echo cancellers are bypassed. Moreover, the paragraphs show that the decision whether or not to allocate an echo canceller is made once; namely when a call is received and before it is coupled to a local telephone. It is not made after coupling of the local telephone to the external transmission medium.

Pruett et al.

Pruett et al. is directed to a method of processing wireless communications that allows echo cancellers to be controllably allocated by a controller element 104 to telecommunications channels. In the method, signaling data exchanged during call set-up is used by the controller 104 to determine whether a source of echo may be present in a telecommunications channel, such as a hybrid interface between a two-wire system and a four-wire system (col. 5, lines 15-25, and col. 9, line 61-col. 10, line 15).

Contrary to the Examiner's assertion, Pruett et al. does not inherently apply a method to detect echo in a signal, such as the detection of echo energy and/or a level of echo cancellation activity. At col. 9, line 64-col. 10, line 10, Pruett states as follows:

Echo indication data may be determined by comparing the call destination or origination data to predetermined values stored in a data table of the telecommunications switch. Alternatively, echo indication data may be determined

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by analyzing the signal or other suitable methods. For example, the signaling data may indicate that the call has been routed from a four wire conductor to a two wire conductor, that the calling party is calling from a land-based telephone headset (land party data), or the telecommunications system call processing system may determine that other sources of echo are present. The signaling data may also be compared to a table of predetermined data values that indicate whether an echo signal may be present on the telecommunications channel.

Thus, Pruett et al. teaches the use of information in the signal other than echo energy and/or echo cancellation activity to determine if there is a potential source of echo energy.

Not only does Pruett et al. fail to teach or suggest activating echo cancellation in response to a high degree of echo energy and/or echo cancellation activity but also Pruett et al. fail to teach or suggest monitoring of the channel after echo cancellation is initiated or deactivating echo cancellation during a call in response to a low degree of echo cancellation activity or echo energy. Pruett et al. specifically states that echo cancellation is terminated "after the call reaches a state of completion." (Col. 5, lines 57-59; *see also* col. 12, lines 20-26.)

Toshiyuki

Toshiyuki, et al. fails to overcome these deficiencies of Dunn et al. and Pruett et al. According to Toshiyuki, the initial decision on whether or not echo cancellation is used is based not on echo cancellation activity or echo energy but on whether or not the call is long distance. If the call is a local call, it does not appear that echo cancellation is performed. Although Toshiyuki teaches that echo cancellation is stopped before the call terminates, it is not stopped based on echo cancellation activity or echo energy *but on the expiration of a selected time period*. To reinitiate echo cancellation, the subscriber must press a button. This approach is highly

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undesirable, as the subscriber will experience rapid drops in voice quality and must manually press a button to restart echo cancellation. In a long call, the subscriber may have this cycle repeated numerous times. The approach of the present invention, namely basing echo cancellation need directly or indirectly on the actual echo energy levels encountered, is superior to the manual approach of Toshiyuki.

The Newly Added Claims 35-44.

Applicant has added claims 35-44 of which claims 35 and 39 are independent. Applicant respectfully contends that the references fail to teach or suggest at least the italicized features in independent claims 35 and 39:

35. A switching center, comprising:
a plurality of first ports for use in coupling the switching center to a plurality of local user devices;
a plurality of second ports for use in coupling the switching center to a plurality of external transmission media, each of said plurality of external transmission media being coupled at an opposite end to another switching center within the communication network;
a switch for selectively coupling individual first ports to individual second ports within the switching center for use in establishing communication connections between local user devices and remote user devices in the communication network;
a pool of echo cancellation units that are each capable of reducing echoes received by said switching center from an external transmission medium;
a call classifier operable to detect an echo energy level from a first external transmission medium associated with a first communication connection;
and
an allocation unit for allocating an echo cancellation unit from said pool of echo cancellation units to the first communication connection being supported by the switching center in response to detection, *by the call classifier*, of echo energy above a threshold level from a first external transmission medium associated with said communication connection, wherein the first communication connection is between a first local user device and a remote user device.

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39. A method for performing echo cancellation within a switching center of a communication network, said switching center being coupled to a plurality of local user devices and a plurality of external transmission media, said method comprising the steps of:

coupling a first local user device to a first external transmission medium as part of a communication connection between the first local user device and a remote user device;

the call classifier detecting an echo energy level on the first external transmission medium; and

in response to the call classifier detecting an echo energy level on the first external transmission medium rising to a level that is unacceptable, performing echo cancellation on the communication connection.

In rejecting these claims, the Examiner makes a questionable argument. While admitting that none of the cited references teach or suggest using a call classifier to determine whether echo cancellation is required, the Examiner states that "the method of determining an echo power level is well-known in the art" and cites "admitted" prior art in the specification at page 12, line 17- page 13, line 6 for support of this statement. The only relevant sentences in this paragraph state:

Call classification structures and techniques are generally well known in the art.
In a PBX system, call classification functionality is generally provided as an internal feature of the switch.

This paragraph simply recognizes that call classifiers are known and have been employed in switching centers. Commonly, call classifiers are used in switching centers for tone detection. This language does not admit that call classifiers have been used to detect echo energy levels. It is a far stretch to conclude from this language that it is obvious to use a call classifier unit to determine whether or not echo cancellation is required on a communication.

Accordingly, the claims are allowable over the cited art.

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The dependent claims provide further bases for allowance.

Dependent claim 2 requires the further steps of thereafter monitoring the first external transmission medium for at least one of echo cancellation activity and echo energy during the communication connection between the first local user device and the remote user device; and when the detected at least one of echo cancellation activity and echo energy falls below a determined threshold, again discontinuing echo cancellation on the communication connection.

Applicant wishes to clarify the intended meaning of certain claim language in light of the Federal Circuit decision "SupcrGuide Corporation v. DirecTV Enterprises, Inc., et al., 358 F.3d 870 (Fed. Cir. 2004). In that decision, the Federal Circuit held, under the unique facts of that case, that the phrase "at least one of a desired program start time, a desired program end time, a desired program service, and a desired program type" means "at least one of a desired program start time, at least one of a desired program end time, at least one of a desired program service, and at least one of a desired program type".

Applicant has used the phrase "at least one of" in a number of claims and wishes to clarify to the Examiner the proper construction of this phrase. Applicant intended the phrase "at least one" as used in the claims to be an open-ended expression that is both conjunctive and disjunctive in operation. For example, the expression "at least one of A, B and C" means A alone, B alone, C alone, A and B together, A and C together, B and C together, or A, B and C together. Applicant believes that this construction is consistent with the Examiner's construction of the claims in the

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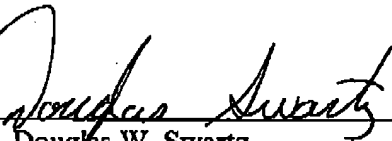
Office Action. If the Examiner disagrees with this construction, Applicant respectfully requests that the Examiner notify Applicant accordingly so that Applicant can further amend the claims.

Based upon the foregoing, Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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